Increasing reliance on land-based bombers for attacking regional targets may allow the United States to maintain fewer carriers. Reducing the number of carrier battle groups from the planned 12 (11 active carriers plus one in reserve that can also be used for training) would illustrate one way to reduce the duplication among assets for power projection and has been discussed by many policymakers, including Senator Nunn and President Clinton. A large reduction in the number of carriers, in this illustration from 12 to 7, would be consistent with the topic that is the subject of this paper--major changes in service roles and missions. Alternatively, a more modest cut of two carriers would be more representative of a reduction in the redundancy in the forces maintained by the Air Force and the Navy for projecting power.

A Carrier Force for One Major Regional Conflict

Seven aircraft carriers should be more than enough to cover one major regional conflict. In the Bottom-Up Review, DoD assumed that four to five carriers would be needed on-station to fight one regional conflict. Current Administration force planning, however, is based on the need to have forces sufficient to engage in two regional conflicts nearly simultaneously. The shortfall in power projection that would result from reducing the number of carriers and their associated air wings presumably would have to be covered by the Air Force's long-range bombers.

Savings. Reducing the number of carrier battle groups from 12 to 7, and the number of air wings from 11 to 6, would save more than $3 billion in 1995 and $17.4 billion during the 1995-1999 period, compared with the Administration's plan (see Table 3). About $14.9 billion of these savings would stem from operating and maintaining a smaller force of carriers, the surface ships and submarines needed to defend them, and the replenishment ships needed to resupply them; the remaining $2.5 billion would be saved by terminating procurement of a new carrier (CVN-76) needed to maintain the force level at 12 carriers when an older carrier retires. The Department of the Navy also would not need to buy as many F/A-18 aircraft. CBO has not estimated the procurement savings because they would be realized after 1999, but eventually the Navy might avoid buying at least 300 F/A-18s. If those planes were to be the new E/F model, which might eventually cost more than $70 million each, long-term savings could total roughly $19 billion.

Disadvantages. Despite their high cost and the limited range of the aircraft they carry, carriers clearly provide more flexibility than do land-based tactical aircraft, which depend on bases in the area of operations. They also provide more capacity to strike targets and--after evaluating damage--strike them

again than would long-range bombers operating from the United States. If such capacity were required, carrier-based aircraft might be the only ones available to provide it in the early stages of a war. For example, aircraft operating from carriers might have been the only forces available to the United States to perform this mission adequately in the war with Iraq if the Iraqis had attacked Saudi Arabia and been able to deny allied forces the use of Saudi airfields.

Reducing the fleet to seven aircraft carriers would also lessen U.S. presence overseas in peacetime. The Navy argues that the presence of U.S. carrier battle groups in the Pacific Ocean, the Indian Ocean, and the Mediterranean Sea deters aggression by regional powers and allows the United States to respond quickly if a crisis should arise in those areas. It is difficult to measure the deterrent value of carriers on-station overseas, though a number of Presidents have placed enough reliance on the deterrent value of the aircraft carrier to use it as a major diplomatic tool. Reducing the fleet to seven carriers would mean that the United States would run the risk of being able to maintain a continuous presence only in the Persian Gulf or the Mediterranean and the Western Pacific, with no coverage in the remaining region or regions.

TABLE 3. SAVINGS RESULTING FROM RELYING MORE ON THE AIR FORCE FOR POWER PROJECTION
(By fiscal year, in millions of dollars of defense budget authority)

Change	1995	1996	1997	1998	1999	Total
Eliminate Five Carriers[a]	3,070[b]	1,840	2,930	4,090	5,450	17,380
Eliminate Two Carriers	2,790[b]	700	940	1,190	1,220	6,840

SOURCE: Congressional Budget Office based on Department of Defense data.

a. Includes savings from reducing the number of surface ships and submarines needed for escort and replenishment.

b. Includes savings from canceling procurement of aircraft carrier.

The Navy, however, may be able to replace the presence represented by carrier battle groups by using naval task forces composed of groups of ships without a large carrier. These task forces could include amphibious ready groups centered around small carriers (from which vertical/short take-off and landing--VSTOL--aircraft and helicopters can operate); surface action groups consisting primarily of surface combatants; or maritime action groups consisting of surface ships, land-based marine patrol aircraft, and a submarine. With the advent of VSTOL aircraft, the Tomahawk cruise missile, and the Aegis air defense system, such alternative formations could provide significant strike capability and air defense. These capabilities would be less than those of a carrier battle group, but they might still compare favorably with those of regional powers, and the presence of such ships might well be sufficient to demonstrate U.S. intent. Another alternative that is available in certain theaters--for example, the Mediterranean Sea--would be the presence provided by the navies of allied nations, which may be an adequate substitute for the presence of a U.S. carrier battle group.

Reducing the carrier force from 12 to 7, however, would result in an absolute reduction in the amount of air power available to the United States. Though the amount of air power available may exceed what the United States will require in any single contingency, this reduction might mean that too few forces would be available if, as the Administration assumed in its planning, the U.S. military had to fight in more than one region at once. Such cuts might not cause the United States to lose a war, but they could result in lost territory. Regaining that territory would delay victory and increase U.S. casualties.

Alternatively, the carrier fleet could be reduced to seven and the reduction in naval air power offset, at least partially, by retaining more long-range bombers or more tactical air wings. The Air Force plans to retire a number of older B-52 bombers that had previously been assigned the mission of strategic nuclear attack. But since a B-52G squadron assigned to a conventional mission, which notionally contains 14 bombers, costs about $140 million (in 1995 dollars) each year to operate, the Air Force could retain several B-52 squadrons without substantially diminishing the savings shown. Another way to offset the reduction in naval aircraft would be for the Air Force--which must cut two additional tactical air wings to reach planned force levels--to retain those wings now planned for elimination. Again, since the annual cost (in 1995 dollars) to operate an active wing of F-16 aircraft is only about $330 million, and that of a reserve F-16 wing ranges from only $130 million to $150 million, a number of land-based fighter wings could be retained and substantial savings realized.

A Carrier Force for Two Major Regional Conflicts

If the presence represented by a fleet of seven carriers is judged to be inadequate, a smaller cut in carriers--perhaps to 10--might be considered. Ten carriers would provide the fleet needed to fight two wars at the same time, though Air Force bombers would probably still receive some increased use in such a situation. Moreover, 10 carriers would allow the Navy to maintain a larger peacetime presence with its vessel of choice, the carrier. But while 10 carriers clearly provide more capability, they also cost substantially more to operate. Average annual operating savings associated with a 10-carrier force compared with the Administration's plan would be about $900 million when fully realized, or about 70 percent lower than the $3 billion average annual operating savings realized with a fleet of seven carriers.

INCREASE RELIANCE ON ARMY SYSTEMS FOR THEATER MISSILE DEFENSE

Each of the services develops and deploys systems designed to counter attacks from the air. The Navy's systems are primarily limited to defending its ships from air attack. The Army and the Air Force, however, are assigned the mission of protecting not only their own forces but large geographic areas from attack by hostile airborne threats. The Air Force provides defense by using fighter aircraft to attack hostile aircraft regardless of their destination or intended target. Conversely, the Army's systems are designed to protect the area surrounding their position on the ground; the size of that area would depend on the range of the particular air defense system.

The airborne threat that all of the services must defeat has, however, expanded in recent decades. Once confined primarily to aircraft delivering bombs, the threat now includes cruise missiles and theater ballistic missiles as well. Each service is developing systems to counter all of these airborne threats, but the question of which service should be primarily responsible for protecting specific areas on the ground has yet to be answered.

In carrying out its traditional air defense mission, the Army has been developing theater missile defense (TMD) systems to defeat theater ballistic missiles for several years. The recent emphasis on theater defenses, however, has spawned a flurry of new TMD programs in the Navy and the Air Force. Although these systems reflect the missions and operating environments unique to each service, they also overlap with systems that the Army is developing. Some Members of Congress have expressed concern about the cost of developing so many apparently redundant systems. To demonstrate

the savings and losses in capability that could result from eliminating overlapping systems, this illustration would rely solely on Army programs for TMD.

The Administration plans to spend about $12 billion for all TMD efforts from 1995 through 1999, averaging about $2.3 billion a year to deploy a "core" package that includes both point defenses (which can protect relatively small targets like airfields or command facilities) and area defenses (to protect areas a few hundred kilometers in diameter). Specifically, the Army would deploy a point defense called the Patriot Advanced Capability (PAC) 3 to defend critical targets toward the rear of the theater and an area defense called Theater High-Altitude Area Defense (THAAD). The Navy would develop a sea-based point defense based on the Standard missile that the Navy deploys on its Aegis destroyers and cruisers. The Administration will also develop a battle management system to enable these TMD systems to function effectively together.[6]

The Administration plans to develop several systems in addition to those in the core package. To increase the area that systems like THAAD can protect, the Administration is developing space-based sensors, a constellation of 20 to 40 satellites called Brilliant Eyes. In addition, the Administration will fund advanced technology demonstrations of three other major systems through 1999: a naval area defense based on Aegis ships that would be similar to THAAD; an Army antiaircraft and antiballistic missile system--called Corps Surface to Air Missile (SAM)--to protect its maneuver forces closer to the front from aircraft, cruise missiles, and short-range ballistic missiles; and interceptors carried by aircraft that could destroy missiles early in their flight (during the so-called boost phase). In 1998, the Administration will select one of these systems to begin the next phase of development (demonstration and validation). The other two may enter demonstration and validation after 1999.

Consolidating TMD efforts within the Army and eliminating the TMD programs in other services would illustrate potential savings that could result from reducing planned duplication and redundancy. Land-based systems would be favored because they can defend forces both near and away from the coasts. The Army would develop the Patriot and THAAD defenses, as well as a battle management system to tie the defenses together. The Navy's point and area defenses would be terminated. This illustration would also cancel the Brilliant Eyes program and require that the Army rely instead on

6. For more information on theater missile defenses, see Congressional Budget Office, "Theater Ballistic Missile Defenses: Selected Issues," CBO Staff Memorandum (July 1993).

existing satellites and ground- and aircraft-based sensors for early warning and tracking. To reflect this smaller effort, it would also reduce by one-third general research and support funds in the TMD program that are not tied to a specific system, saving roughly $200 million annually. This illustration would keep all non-TMD funding at the Administration's planned level, except that it would eliminate funding for Brilliant Eyes and boost-phase interceptors.

Relative to the Administration's plan, these actions would save $600 million in 1995 and $3.8 billion from 1995 through 1999 (see Table 4). Savings after 1999 are less certain, but preliminary estimates indicate that consolidating TMD programs could save $10 billion or more from 1995 through 2006.

Eliminating those programs would have several disadvantages. Canceling all sea-based defenses would reduce the options available to U.S. commanders during a crisis. Although sea-based defenses are limited to defending coastal regions, they can be deployed to a region quickly without requiring access to secure airfields to be airlifted into the theater--a limitation of land-based systems like THAAD. The United States can also deploy sea-based defenses without having to obtain basing rights in another country, a process that could cause domestic political difficulties for some friendly governments.

TABLE 4. SAVINGS RESULTING FROM INCREASING RELIANCE ON ARMY SYSTEMS FOR THEATER MISSILE DEFENSE
(By fiscal year, in millions of dollars of defense budget authority)

Change	1995	1996	1997	1998	1999	Total
Terminate All Air Force and Navy Efforts	600	690	690	910	960	3,850
Terminate All Air Force and Navy Area Defense Efforts	400	440	400	610	700	2,550

SOURCE: Congressional Budget Office based on Department of Defense data.

Sea-based systems can provide coverage in areas not accessible to land-based defenses. On those occasions where missile flight would occur largely over bodies of water, Aegis ships with area defense systems could be deployed between the attacking and the target countries. Because the ship could position itself almost anywhere along the missile flight path, a sea-based defense could maximize the amount of its protective umbrella that covered the target country. Such a capability could be useful, for example, in defending Japan from attack by North Korea or Egypt from attack by countries in the Middle East. Sea-based defenses would also allow the United States to defend small areas--like ports or amphibious landings--from ballistic missile attacks, as well as larger areas like cities, before a system like THAAD could be deployed.

Changes envisioned in this illustration would also limit the area that could be defended by the remaining land-based systems. Canceling Brilliant Eyes would limit the area that THAAD could defend because ground-based and airborne sensors would take longer to detect incoming missiles, thereby reducing the range at which those missiles could be intercepted. These effects may be made more severe by the recent decision of the Department of Defense to cancel the Follow-on Early Warning Satellite, which might have provided some of those capabilities. Canceling Brilliant Eyes could also affect the capability of a future national missile defense system, if the United States eventually chooses to deploy one. In addition, terminating boost-phase interceptor programs would halt work on systems that have the potential to be effective against missiles armed with nuclear or chemical warheads, if technical problems can be overcome.

Not withstanding such disadvantages in this illustration, the United States would still deploy capable land-based point and area defenses and a battle management system, all according to the schedule proposed by the Administration. Even without sea-based defenses, the United States would still retain some ability to defend ports adequately. For example, supply ships could deliver Corps SAM, Patriot, and THAAD batteries to defend the port. Similarly, planned upgrades by the Marine Corps to its Hawk air defense system will provide some capability against theater ballistic missiles during amphibious landings once beachheads are secure. Finally, much of the mission for the Navy's area defense is to protect allied populations. If Japan and European nations feel threatened, they could deploy their own ballistic missile defenses.

Consolidating all TMD funding within the Army would halt several programs early in their development phase. In addition to the savings between 1995 and 1999, these actions could avoid significant costs beyond

1999, when the programs would have entered full-scale development and production.

In addition to lowering costs, canceling Brilliant Eyes would eliminate the concerns of some critics that the sensors--by effectively substituting for antiballistic missile radars--would violate the Anti-Ballistic Missile treaty. The contractor building THAAD has stated that the capability of its system does not depend critically on Brilliant Eyes and that such sensors are only needed to defend the large areas required for national missile defenses. Since the Administration has indefinitely delayed a decision to deploy national missile defenses, space-based sensors such as Brilliant Eyes may not be required for many years, if at all.

Nevertheless, eliminating sea-based point defenses, as envisioned in this illustration, might leave the United States with inadequate capability to defend against theater ballistic missiles. U.S. commanders might want the flexibility to defend point targets from the sea. Such a capability could be useful to defend ports when ships are bringing supplies and materiel for U.S. forces or to support Marines during an amphibious landing. Sea-based defenses would also allow U.S. commanders to provide some deterrence early in a crisis by deploying defenses off the coast of an ally without having to secure basing rights. A less drastic reduction of the TMD program would deploy Army point and area defenses and develop Navy point defenses as well, but not Navy area defenses. Savings would be more modest (about $400 million in 1995 and just under $2.6 billion through 1999 compared with the Administration's plan), but the additional capability gained might be worthwhile.

IMPLICATIONS OF CHANGING ROLES AND MISSIONS

The illustrations in this paper show that reducing currently redundant capabilities among the services could result in significant budgetary savings. An unspoken assumption underlying all these savings is that the service left with the sole responsibility for the mission in question funds that mission out of existing budgetary resources. If each of the services has sufficient resources today to carry out its current mission, and if the illustrations deal with truly duplicative capabilities between the services, then the currently planned level of funding should be sufficient.

Each of the options in this paper was meant to illustrate the implications of eliminating one specific duplication that has been highlighted during recent defense debates. The combined effect if all of the options were

adopted was not considered. In fact, each of the illustrations should be considered on its own merit.

A legitimate concern might be the loss in total capability that is inherent in each of the illustrations. Although the issues addressed all involve duplicative capabilities, the multiple layers of capability do provide U.S. commanders with the ability to carry out the same mission simultaneously in different theaters or from different avenues of attack. Without the redundancy inherent in overlapping roles and missions, the United States would lose this ability. Defense experts generally agreed that this duplication, though expensive, was necessary when the United States faced the threat of massive and overwhelming forces fielded by the Soviet Union and its allies in the Warsaw Pact. Without this threat today, and facing budgetary constraints, such flexibility may be a luxury the United States can no longer afford.

Consolidations in support functions, which were not explicitly examined in this chapter, could conceivably result in significant savings without, however, affecting overall military capability. Furthermore, implementing multiple consolidations in support activities probably would not have adverse consequences. Although CBO has not yet had an opportunity to examine all the implications of consolidations in specific support activities, such consolidations do provide an opportunity for increasing the efficiency of the U.S. military and saving money, without diminishing overall capability.